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Investigation of the Causal Relationship between Deposit Mobilization and Credit Extension in the Nigerian Commercial Banking Sector

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ABSTRACT

Commercial banks are statutorily vested with the financial intermediation role in an economy- mobilizing savings from the surplus ends and channelling of the same as credit facilities to the scarce ends. This paper examines the causal relationship between deposits and loans in the Nigerian commercial banking industry for the period, 1981-2014. Using Pairwise Granger Causality Tests on the data sourced from the Central Bank of Nigeria, the study finds a unidirectional relationship from credit to deposit. Additional finding shows that money supply granger-causes both deposit mobilization and credit utilization in Nigeria. These findings are quite revealing and the policy implications for the government is that the development of the Nigerian commercial banking sector lies on bank credit management as well as CBN's monetary policy management, not forgetting the need to strengthen policies linking informal savers or unbanked savers with financial institutions. When banking sector is strengthened, economic growth will be achieved as Nigeria is a bank-based economy.

Keywords: Commercial Banks, Deposit Mobilization, Credit Extension, Causality, Nigeria)

1. Introduction

In a free market economy like Nigeria, the supply of funds and the demand for credit are determined by the economic agents and moderated by financial institutions in such an economy. Often, financial institutions provide the unavoidable intermediation role in fund mobilization and fund utilization activities. Commercial banks are statutorily vested with the financial intermediation role in an economy- mobilizing savings from the surplus ends and extending the same as credit facilities to the scarce ends. Commercial banks, otherwise known as Deposit Money Banks (DMBs) dominate Nigerian financial service markets and have remained the highest savings mobilizing institution in the country. Yet, the deserved attention has not been given to establishing the causal direction between the two financial intermediation services they render, that is, deposit mobilization and credit extension.

A number of studies have shown how bank's intermediation activities interrelate (e.g., Fry, 1988, Soyibo, 1994; 1996), but we could not find any that investigated causal direction between deposit mobilization and loan extension in the Nigerian commercial banking sector. A focus on the commercial banking sector is motivated on the level of intermediation role it plays in the Nigerian financial markets and economic development. The sector is more developed in Nigeria than any other financial service sector and its financial intermediation function is more pronounced than any other. For example, commercial banks have enjoyed consistent organic growth and less competition with other financial institutions in terms of market for loans, savings mobilization, transmission of payments and supply of credit to the users (Nwankwo, 1990:19).

The overall objective of this paper is to investigate the causal direction of the two intermediation activities of commercial banks, namely fund mobilization and credit extension, in Nigeria. The period of investigation is 1981 to 2014 as data availability permits. Granger model was used in the

causality tests after conducting some pre-tests on the data sourced from the Central Bank of Nigeria (CBN).

Of course, Nigerian economy like any other developing countries is bank-based, therefore, an insight on the causal direction of the two intermediation activities in the Nigerian commercial banking sector will serve as a guide for government targeted program and policy direction on banking sector development which is critical to the national economic growth. Certainly, informed and evidence-based policy will facilitate the actualization of CBN's development financing initiative "targeted at agricultural sector, rural development and Micro, Small and Medium Enterprises" (MSMEs) for rapid and sustainable economic growth (CBN, 2017). This study is important because credit through the banking sector is the transmission channel between savings and investment in Nigeria (Soyibo, 1996). Therefore, this study provides an analytical base for policy action to motivate productive investment in the real sector, thereby, shifting the economy from consumer-based to productive-based.

The rest of this paper is structured as follows. Section two presents an overview of Nigerian banking (commercial) sector for the period of forty-one years highlighting origin, regulations, deposit and credit extension trends in the sector. Section three reviews relevant literature while section four presents data and method of analysis. The penultimate section presents the results of the analysis and discussed them while the final section concludes the study highlighting the policy implications of the findings.

2. Nigerian Banking Industry

2.1 Origin of Commercial Banking in Nigeria

The history of banking business in Nigeria can be traced to 1894 through the Bank of British West Africa, which is the present day First Bank of Nigeria Plc. At inception, there was no legal framework guiding the business of banking until 1952 when the Banking Ordinance was promulgated (Sanusi, 2006). Banking legislations evolved from 1952 to 1991 when the two major laws that regulate the industry today were enacted. Those pieces of legislations are – the Central Bank of Nigeria Act 1991 (as amended) and the Banks & Other Financial Institutions Act 1991 [BOFIA] (as amended).

According to BOFIA, banking business in Nigeria is classified into (a) Commercial banks; (b) Merchant banks; and (c) Specialised banks, (Special banks include non-interest banks, microfinance banks, development banks and mortgage banks). However, Section 66 of the Act defines commercial bank as "any bank in Nigeria whose business includes the acceptance of deposits withdrawable by cheques". The functions of commercial banks in Nigeria extends to payment and settlement mechanism in the economy. The difference between commercial banks and other banks in Nigeria lies on diversity of both their deposit mobilization and lending sources unlike other banks usually meant to be homogeneous in their deposit mobilization and lending sources (Nwankwo, 1990).

Of important note is that between December 2000 and November 2010 the Nigerian banking industry operated a universal banking regime, in which, one licence authorises a bank to be involved not only in core banking activities but also in other financial activities. Commercial banks are permitted to engage in other financial services either directly or indirectly through their designated subsidiaries. This suggests that specialised banking disappeared under the regime, only to resurge latter in 2010 as the CBN Regulation No. 3 reversed to status quo as provided by BOFIA.

As at 2014, 23 commercial banks operate in the industry as against the 25 commercial banks that survive the 2004 reform in the sector. Since after the reform, many mergers and acquisitions have taken place in the industry, for example, Stanbic Bank Limited merged with IBTC-Chartered Bank; Ecobank Plc acquired Oceanic Bank Plc; Access Bank Plc acquired Intercontinental Bank while the acquisition of Keystone Bank by Skye Bank is at the verge of completion. However, the regulatory authorities also licensed Heritage Bank as a new bank after the recapitalization exercise.

2.2. Operations and Intermediation Trends

In the recent years, the sector has witnessed significant growth in the operations and intermediation activities. Strategic among the developments is the improvement in the banking penetration level. Statistical evidence shows that the number of (*commercial*) bank branches increased in the 2000s. The number of bank

branches which was 869 as at 1981 moved to 2,185 in 1999 and jumped to 3,010 in 2002. As at 2014, the number has increased to 5,526 (CBN, 2014). The bank branch network is crucial in intermediation role of banks as it offers opportunities for the unbanked to be included especially in the rural areas with more funds been mobilized amounting to more loans facilities and advances been given to customers.

The Nigerian commercial banking industry has witnessed volatility in her intermediation activities especially in credit extension as shown in Figure 2. For instance, credit to private sector peaked in 2007 standing at 91.61 and sharply dropped within three years to -3.80 in 2010 and -0.83 as at 2014. There is a relative stability in the case of savings to GDP as depicted in Figure 1. The trend moved from 3.33 in 1996 to a peak in 2009 standing at 23.24. The details of the statistical record is shown in Appendix Table.

Fig. 1: Trend of Savings in Banks for the Period, 1981-2014

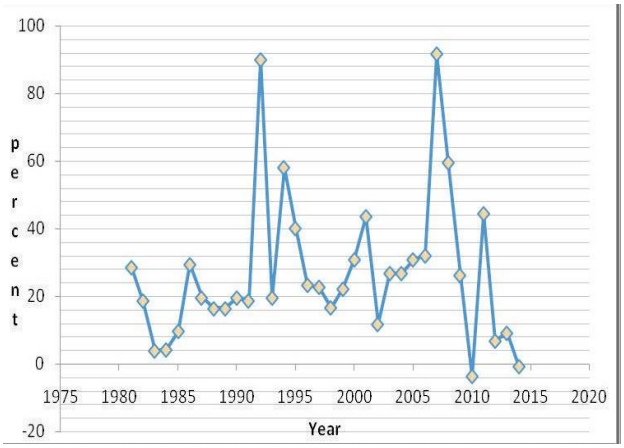

Fig. 2: Trend of Bank Credit to Private Sector for the period, 1981-2014.

Literature Review

This section reviews theories of financial intermediation and linked the same with the empirical evidence of the interactions between the two bank intermediation activities in Nigeria. Scholars have made attempts to present theoretical underpinning of financial intermediation and the deposit-credit roles of the bank in an economy.

The duo theories that explain the financial intermediation in saving-credit link are the complementarily theory of McKinnon (1973), and the debt intermediation theory of Shaw (1973). McKinnon's theory posits that demand for money is directly related to physical capital accumulation as much as real interest rate is higher or at least equal with the real return on investment while Shaw's hypothesis argues that savings stimulate investments because of increase in credit supply. McKinnon-Shaw is the established framework on financial intermediation linking savings supply and credit demand.

The applicability of McKinnon-Shaw financial intermediation theories in Nigeria was tested by Soyibo and Adekanye (1992). The study confirmed that these theories are applicable in the Nigerian financial system. While focusing on the demand for money analysis, the authors found that Shaw's debt-intermediation hypothesis is superior to McKinnon's complementarity theory in Nigeria. However, the aim of this study is not to test the superiority or otherwise of either of the theories.

Prior empirical studies show the interaction and factors that affect savings and credit in Nigeria (Soyibo & Adekanye, 1992; Soyibo, 1994; 1996; Masha, Essien, Musa, Akpan & Abeng, 2004 Ukeje, Essien, Yakub & Akinboyo, 2004; Simon-Oke & Jolaosho, 2013). Soyibo & Adekanye (1992) use descriptive indices to analyse the impact of the policies of regulation and deregulation on savings mobilization in Nigeria and found that determinants of savings include: lagged aggregate savings ratio, lagged aggregate savings, current GDP, foreign savings, and ex *post* real interest rate.

Masha, et al. (2004) on the other hand identified savings repressors as high reserve requirements on deposit; legal ceilings on bank lending and deposit rates; directed credit; restriction on foreign currency capital transacts; and restriction on entry

into banking activities. Obademi and Elumaro (2014) confirmed that repression hypothesis applies in the Nigerian banking sector with focus on interest rate regulation for forty-one years under different regulatory regimes.

Ukeje, et al (2004) document that low savings rate, poor banking habit among Nigerian as well as naive attitude of bankers to low income savers are causes of low deposit mobilization. On the other hands, credit utilization for private sector enterprises in Nigeria are affected by lending rate, expected inflation rate, credit maturity structure, level of economic activity, and financial system efficiency among others. Real interest rate is another hinderer to savings in Nigeria as documented by Simon-Oke and Jolosho (2013).

Soyibo (1994, p.11) analyses the determinants of lending decision of banks in Nigeria. The author found that six factors in the order of ability of "borrower's to repay, profitability of the sector; borrower's experience in a similar project; returns to the bank; borrower's contribution to the project; and the opportunity cost of the fund to the bank" were found as important determinants to that influence the bankers lending behaviour in Nigeria. The author concluded that asset management decision governs the behaviour of bankers in lending to customers. Further, Olokoyo (2011) added that volume of available deposits is one of the major factors that influence commercial banks' lending behaviour in Nigeria.

Yet, Soyibo (1996) found that most organizations in Nigeria prefer financing their investments internally, especially, through retained earnings to bank credit. If the situation still holds, the intermediation flow may be affected which will reflect on the causal directions between the savings and credit.

1. Data And Method

The study used data of commercial banks in Nigeria for the period of 1981-2014 to gauge the causal directions of deposit mobilization and credit in the Nigerian commercial banking sector. Data were sourced from the CBN Statistical Bulletin 2015.

In this study, deposit mobilization refers to deposit mobilized by commercial banks as ratio to GDP. It is being represented with SAVINGS. The credit extension was proxied by credit to private sector to GDP being represented by CREDIT. The CONDITIONING are the controls for other factors associated with financial intermediation, which include broad money supply being represented with M2; inflation being proxied by the consumer price index (CPI) and represented by INF; and per capita income being represented by PERCAP.

The adopted analytical techniques in this study include correlation coefficient matrix, which gauges the signs and sizes of the association found between variables tested, and Granger Causality Tests. Because correlation is not causation, Granger (1969) framework was used in testing the causal direction between variables of interest and other control variables. All variables tested are in ratio base. This is to ensure uniformity and reliability of the results

The null hypothesis in all the Pairwise tests conducted and presented in Table 3 is that the paired variables do not granger cause each other.

2. Results And Discussions

This session presents results as shown in Tables 1-3. The results are discussed and the implications of the findings were highlighted for policy actions by policy makers.

5.1 Results

The summary statistics presented in Table 1, showed average savings and credit by commercial banks in Nigeria for the period under investigation as 8.72 and 26.82 respectively. However, the variability for credit is quite higher than savings with standard deviation of 21.82 and 3.83 apiece. This suggests high volatility in credit than in savings mobilisation as financial services render by commercial banks in Nigeria.

Table 1: Summary Statistics

	CREDIT	SAVINGS	M2	INF	PERCAP
Mean	26.82998	8.727273	23.58681	20.59723	2.422317
Maximum	91.61543	23.24536	57.88222	76.75887	3.807900
Minimum	-3.806432	3.335644	-0.560000	0.223606	1.724027
Std. Dev.	21.82092	3.839757	15.78187	19.17291	0.658198
Observations	34	34	34	34	34

Note: INF represents inflation while PERCAP represents per capita income.

Table 2: Correlation Matrix

Correlation Probability	CREDIT	SAVINGS	M2	INF	PERCAP
CREDIT	1.000000				

SAVINGS	0.055855	1.000000			
	(0.7537)	-----			
M2	0.575477	-0.016289	1.000000		
	(0.0004)	(0.9271)	-----		
INF	0.220879	-0.196384	0.249252	1.000000	
	(0.2094)	(0.2656)	(0.1552)	-----	
PERCAP	-0.061813	0.670871	-0.245295	-0.401192	1.000000
	(0.7284)	(0.0000)	(0.1620)	(0.0187)	-----

Notes: 1. INF represents inflation while PERCAP represents per capita income.
2. The test is one-tail.

Source: *Eview* 8.1 Output

Though, no relationship was found between deposit mobilization (savings) and credit extension, but that does not suggest absence of any relationship between them. Hence, the need to test for any possible association via-a-vis the direction of such association, if any, using Granger Tests.

For the Granger Causality Tests, the optimal lag was selected based on the lowest Alkaike Information Criterion (AIC). AIC is the best model for the purpose optimal lag selection. AIC tests conducted proved lag 3 to have produced the least value of 35.39, hence lag 3 was selected for the analysis. The results of the tests are shown in Table 3.

Table 3: Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
SAVINGS does not Granger Cause CREDIT	31	1.12914	0.3571
CREDIT does not Granger Cause SAVINGS		3.91996	0.0207
M2 does not Granger Cause CREDIT	31	2.99344	0.0508
CREDIT does not Granger Cause M2		2.15893	0.1192
INF does not Granger Cause CREDIT	31	0.66194	0.5835
CREDIT does not Granger Cause INF		0.87700	0.4668
PERCAP does not Granger Cause CREDIT	31	0.63460	0.6000
CREDIT does not Granger Cause PERCAP		0.47424	0.7031
M2 does not Granger Cause SAVINGS	31	2.33902	0.0988
SAVINGS does not Granger Cause M2		0.91909	0.4465
INF does not Granger Cause SAVINGS	31	1.58886	0.2181
SAVINGS does not Granger Cause INF		0.07934	0.9706
PERCAP does not Granger Cause SAVINGS	31	3.01234	0.0498
SAVINGS does not Granger Cause PERCAP		0.12464	0.9446
INF does not Granger Cause M2	31	0.55211	0.6516
M2 does not Granger Cause INF		2.01741	0.1383
PERCAP does not Granger Cause M2	31	3.73699	0.0246
M2 does not Granger Cause PERCAP		0.14568	0.9314
PERCAP does not Granger Cause INF	31	0.71607	0.5521
INF does not Granger Cause PERCAP		1.03738	0.3939

Note: INF represents inflation while PERCAP represents per capita income

Source: *Eview* 8.1 Results

Table 3 shows that causality was found in the direction of credit to savings with an F-statistic of 3.91996 and p-value of 0.0207, there was no causal link in the opposite direction because the p-value was not significant ($p = 0.3571 > 0.05$).

Apart from the variables of interest, some other control variables indicated unidirectional causality as found between money supply and Credit (F-stat = 2.99344 and p-value = 0.0508), money supply and Savings (F-stat = 2.33902 and p-value = 0.0988), Per Capita income and Savings (F-stat = 3.01234 and p-value = 0.0498), and Per Capita income and money supply (F-stat = 3.73699 and p-value = 0.0246). Invariably, other paired variables do not indicate causal links. By and large, only unidirectional causality was found in the three cases where causal relationships were found.

5.2 Discussion of Results

The study adopted the decision of accepting the null hypothesis which states that the two paired variables do not granger cause each other, if the p-value is insignificant, otherwise, the alternate hypothesis is accepted that such paired variables granger causes each other.

Savings-Credit. Between savings and credit, savings does not granger-cause credit in the Nigerian commercial banking sector for the period 1981-2014. The prevalent high rate of inflation in the country could be the reason as real interest rate is major driver to savers. Evidence from Table 1 suffices as the average inflation rate for thirty-one years under investigation stood at 20.59%. During the period of high inflation, savers will prefer to save in property rather than depositing in the bank because value of property appreciates proportionately with increase in inflation rate unlike the money deposited in the bank which depletes with increase in inflation. However, credit does granger-cause savings as the p-value was not statistically significant.

From the unidirectional result recorded, it is observed that the credit drives savings in Nigerian commercial banks industry without reciprocating effect from savings to credit. The pass-through effect could explain this casual direction because a properly utilized credit that goes full length creates cash cycle. Cash cycle going full length describes the movement of cash from the depositor to the

bank (lender) and to the borrower, then, back to the bank and finally to the depositor. Though, the depositor originates the flow but the management of the borrowing (credit management) determines whether the cash flow will be completed or truncated. If well managed, savers will be encouraged to deposit more as they receive interest incentive but where otherwise, savers vis-a-vis lenders will be deterred and intermediation flow will be truncated. Without mincing words, it could be inferred that credit management determines deposit accumulation of the commercial banks in Nigeria.

Money Supply-Credit. Causal association and direction from money supply to credit was found. Though, the result shows only the direction and not the impact, however, it is consistent with previous work of Ayodele (2014) who documents that money supply negatively influences the lending decision of commercial banks in Nigeria.

Money Supply-Savings. Unidirectional causal link was found from money supply to Savings. The result is not surprising because when money supply increase, money in circulation will increase as well which is expected to influence government and firms' consumption (spending more) on goods and services. The increase in government and firms' consumption will increase the income of households which will induce individuals to save more.

Per Capita Income-Savings. The casual direction from per capita income to savings is expected because per capita income induces more disposable income which influences savings propensity. This means that all things being equal that increase in per capita should increase savings and vice versa.

Other paired variables. No causal relationship was found in the rest of the paired variables.

6. Conclusion

The paper investigated the causal direction in intermediation activities of commercial banks in Nigeria from 1981 to 2014. From the results presented and discussed in the previous sections, a unidirectional causal link from credit to deposits was found suggesting that credit motivates savings in Nigeria without a reverse action.

The implication of this finding is that action needs to be expedited toward formulating efficient credit management framework to encourage borrowers for the development of the industry, vis-à-vis, stimulate the economy for optimal productivity and growth. Formulating policy that will help in bringing down the high interest rate in the country is imperative. Persistent high interest rate has been an issue in Nigeria (dangling at double digit) unlike what is obtainable in developed economies like the USA, UK, and Canada.

Similarly, policies to reduce the high inflation rate in the country are of essence as well to encourage savers who are only motivated to deposit (save) their excess income in the bank at a reasonable inflation rate. So, targeted regulatory framework as well as monetary policy should be strengthened to reduce borrowing rate and maintain low inflation rate. In addition, money supply is strategic in both deposit mobilization and credit management in the Nigerian banking sector. This shows the importance of CBN's monetary policy management in the intermediation function of commercial banks in Nigeria, which will in turn, enhance the development of the sector.

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